Good Government in Indiana using GIS Technology

Your Name Here

Indiana GEOGRAPHIC INFORMATION COUNCIL

This presentation is based on the **GIS in Action** section of the Indiana Geographic Information Council (IGIC) website.

The GIS in Action describes GIS projects in three parts;

(1) the **Challenge(s)** that was involved that justified the project

(2) The **Action(s)** that was taken to complete the project

(3) The **Results** of the project that made it a success

For each example, the presentation gives one slide for the **Challenge(s)**, one slide for **Action(s)**, and one slide for the **Results.**

There is more information for each slide on the notes that will help the presenter better understand the message

Geographic Information Systems (GIS)

Connecting People with the World Around Them

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Examples in following slides

This presentation is focused on Indiana

No federal government examples

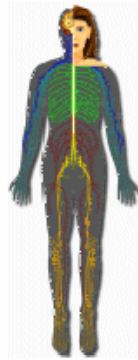Federal Government – 0 Examples (presentation focused on Indiana)

State Government – 3 Examples

County Government – 4 Examples

Municipal Government – 4 Examples

Other Governmental Organizations – 1 example

Remember those overlay "maps" of the human body from grade school?

<SLIDE WILL BE ANIMATED>

An information system is an interconnected set of information resources under the same direct management control that shares common functionality.

Remember those multi-layered images of the human body from middle school science class, showing the body's skeletal system, nervous system and so on? GIS is similar. It layers 20th century geographical maps -of streets, properties, zoning, demographics, even subterranean infrastructure -using 21st century technology. GIS is a computer-based mapping tool that turns roomfuls of old paper files and average everyday maps into visual layers of highly useful knowledge for decision-makers.

A <u>Geographic</u> Information System
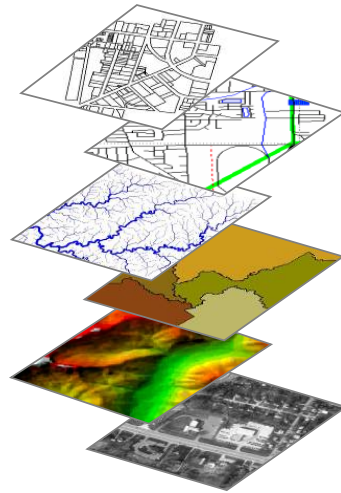
A GIS is similar, layering mapped information in a computer to help us view our world as a system
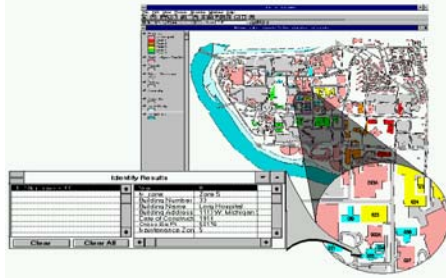
Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

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Just like any information system, a <u>geographic</u> information system (GIS) normally includes hardware, software, information, data, applications, communications, and people.

Layers of information, just like the skeletal system and nervous system, are overlaid on top of each other. This lets us see how these systems interact with each other. GIS lets us analyze and view information in ways not previously possible.

What if?!?

More than just maps…
in a GIS, the maps have tables of data behind the map features.

*This means when you combine different maps you combine data to get **the information you need**.*

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Not just maps - GIS is the great integrator. With it, you can relate different information, like population trends or economic indicators, and reach conclusions about those relationships. GIS simplifies and improves how we see and analyze information.

GIS allows us to combine different map layers and analyze the relationship of the data behind the maps. For example, when you're looking for a home to buy, there are certain things you want to know: How big is the yard? What school district is it in? Is it in a safe neighborhood? Using a GIS, you can see all these things and more, at the same time. You can compare property taxes, drive-time to amenities, elected officials, and crime rates. All the things that go into making a better decision about where to live can be made simpler by using GIS.

So, I can use GIS to answer questions?

Exactly.
For example…

• Soil types help guide tax assessment for agricultural lands

• A county can use GIS to find what portion of the land owned by Bob Scott is on suitable soil

Parcel Layer

ID	Area	Owner
35	654	Bo b Sc ot t
36	226	Howard S mi th
37	240	Mabl e Marble

+ Soil Layer

ID	Area	Soil Type
1	247	Good
2	315	Medium
3	289	Poor

+ Perform Analysis

ID	Area	Soil Type	Owner
1	200	Good	Bob Scott
2	55	Good	Howard Smith
3	67	Poor	Bob Scott
4	168	Medium	Bob Scott
5	200	Poor	Howard Smith
6	98	Poor	Mable Marble
7	101	Medium	Mable Marble

= Get Answers!!

| ID	Area	Soil Type	Owner
1	200	Good	Bob Scott
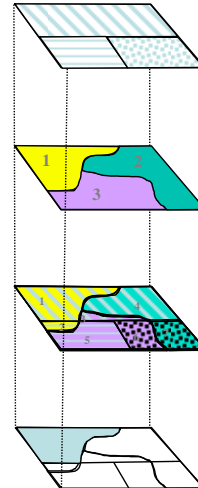
When filtered and analyzed, data becomes information.

GIS is used to ask and answer questions of data to get information. For example, soil types help guide tax assessment for agricultural lands. Using GIS, a land property (parcel) layer can be overlaid with a soil layer to answer the question "What percentage of Bob Scotts land is on suitable soil?" When data are combined and analyzed with GIS, we can identify the problem (I need to know percent of soil types for the land parcel), ask questions (perform the analysis), and get answers (results of analysis in table, charts, graphs, and maps).

And there's lots more

From resource management, economic development, emergency response, and the business of government...

GIS is an increasingly important tool for getting the information you need *– how you need it!*
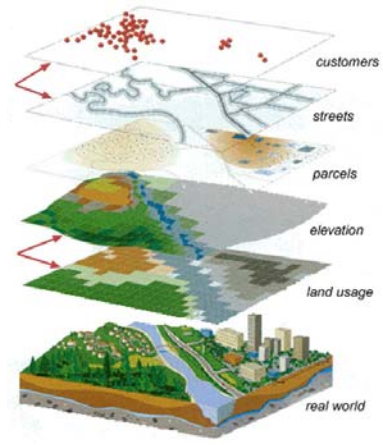
For other examples of how people in different fields are using GIS right now to improve their communities, go to
www.igic.org and see "GIS In Action"

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All levels of Government

- Federal Government
- State Government
- County Government
- Municipal Government
- Other Governmental Organizations

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Examples in following slides

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Federal Government – 0 Examples (presentation focused on Indiana)

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The Federal Government uses GIS for many reasons

- To improve communication with citizens
- To collect data and forecast global crop production
- To more accurately count the residents of the United States
- To analyze weather and climate patterns
- To manage the nations water resources
- To protect the natural environment and the public health

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

List of Federal GIS Uses

General

- To improve communication with citizens and eliminate redundant systems
- To collect data and forecast global crop production
- To more accurately count the residents of the United States
- To analyze weather and climate patterns
- To manage the nations water resources
- To protect the natural environment and the public health

Specific

- Natural Resources Conservation Service (NRCS) created Customer Service Toolkit (CST), which is a collection of software tools for United States Department of Agriculture (USDA) field employees to work with the public
- NRCS provides map data to anyone, anywhere and anytime through the Geospatial Data Gateway www.lighthouse.nrcs.usda.gov/gateway
- USDA created the Crop Explorer Web application which provides near real time global crop condition data www.pecad.fas.usda.gov/cropexplorer
- US Census created the TIGER database which provides map data on the type, location and names of streets, rivers, railroads and other geographic features
- US Census created the American Factfinder, an online mapping application that allows users to map or download census data
- National Oceanic and Atmospheric Administration (NOAA) created the Shoreline Data Explorer which provides high resolution shoreline data which can be viewed online or downloaded
- The Bureau of Reclamation uses GIS to manage water resources and also for good land use planning
- The US Environmental Protection Agency (EPA) created the Waste Management Facility Siting Tool, an interactive GIS application which the EPA determine the viability of sites on selected criteria such as proximity to flood zone, wetlands, karst topgraphy and fault zones

State Governments use GIS for many reasons
- To map and maintain the transportation infrastructure
- To assist in state park planning and design
- To identify severe weather evacuation routes
- To identify areas for environmental remediation
- To help promote state economic development
- To help attract visitor's to the state's tourism resources
- To map and analyze student enrollment trends

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

List of State GIS Uses
General
- To map and maintain the transportation infrastructure
- To assist in State park planning and design
- To identify severe weather evacuation routes
- To identify areas for environmental remediation
- To help promote state economic development
- To help attract visitor's to the state's tourism resources
- To map and analyze student enrollment trends

Specific
- Analyze areas of high wildfire risk
- Map and manage deer (or other game animal) population
- State pavement management
- Map public water supplies
- Map and determine the best hurricane evacuation routes
- Map and analyze nitrate contamination in goundwater
- Map high lead poison potential areas based on age of housing and other factors
- Map and catalog large contiguous areas of natural vegetation for wildlife habitat
- Map and analyze student enrollment trends versus staffing is schools over time
- Map the geology of state parks using digital elevation modelss
- Map and redistrict State House and State Senate districts
- Determine potential sites for wetland mitigation
- Create GIS based voter registration system
- Create site fliers for economic development sites
- Mapping coastal features
- Oil spill planning and reponse
- Determining potential carcass disposal sites in case of mad cow, bird flu outbreak

State Government – INDOT 1
Maintaining the Crossroads of America

- Challenge
  - Needed a way to report roadway deficiencies
  - Identify exact location of each deficiency
  - Identify type of roadway deficiency
  - Dispatch crew to each location with materials they need to fix problem

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

INDOT Example 1

Challenge:

The Indiana Department of Transportation (INDOT) is charged with maintaining over 11,000 miles of state, federal, and interstate highways. In order to ensure the highest quality transportation system for the citizens of Indiana, INDOT needed a way to report roadway deficiencies that would ensure timely response and repair. In addition to knowing how many and what kind of deficiencies exist on a given road, INDOT also wanted to know the exact location of each. This would allow maintenance personnel to return to that location with the materials they needed to fix the problem: paint, pothole filler, light bulbs, etc.

Results:

The data being collected by field crews is integrated into reports and tracking systems allowing INDOT management to:

- See the current condition of the state's transportation infrastructure

- Plan work crew assignments efficiently

- Purchase supplies and materials based on precise maintenance needs

- Assure appropriate distribution of supplies to District or Sub District offices

- Action
  - Tailor an existing GIS application to input road deficiencies
  - Develop an easy-to-use graphical interface
  - Load new GIS application onto touch screen laptops
  - Application allows field crews to simply push a button when they see a problem
  - The application logs the type and location of the deficiency
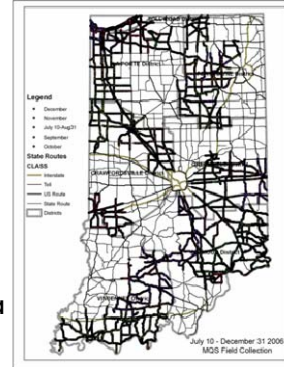
Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

INDOT Example 1

Action:

INDOT decided to tailor a GIS (geographic information systems) application already in use by the department. Doing so meant they could add new GIS and GPS capabilities while leveraging existing product licenses, in-house training, and technical support personnel.

INDOT developed an easy-to-use graphical interface, and loaded the new application onto touch-screen laptops. The new system allows field crews to simply push a button when they see a problem like damaged guardrails, crumbling curbs, or a broken stoplight. Behind the scenes the application logs the type and location of the deficiency, along with the route, district, date, and other associated data.

State Government – INDOT 1
Maintaining the Crossroads of America

- Results
  - See the current condition of the state's transportation infrastructure
  - Plan work crew assignments efficiently
  - Purchase supplies and materials based on precise maintenance needs
  - Assure appropriate distribution of supplies to regional offices

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

INDOT Example 1

Results:

The data being collected by field crews is integrated into reports and tracking systems allowing INDOT management to:

- See the current condition of the state's transportation infrastructure

- Plan work crew assignments efficiently

- Purchase supplies and materials based on precise maintenance needs

- Assure appropriate distribution of supplies to District or Sub District offices

State Government – IDHS Customized Safety

- Background
  - Indiana Department of Homeland Security (IDHS) is aware of the value aerial photography brings to emergency response efforts
  - The department wanted to provide county emergency managers and first responders customized and direct access to Indiana's statewide photography
- Challenge
  - To deliver it to agencies in a useful format, considering most did not have mapping software or the computer hardware necessary to support it

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Indiana Department of Homeland Security (IDHS)

Background:

The Indiana Department of Homeland Security (IDHS) is aware of the value aerial photography brings to emergency response efforts. The Department wanted to provide county emergency managers and first responders customized and direct access to Indiana's statewide photography.

Challenge:

The challenge was delivering it to agencies in a useful format, considering most did not have mapping software or the computer hardware necessary to support it.

- Action
  - To create the Indiana First Response Map (INFRM), a custom viewing application tailored for each of Indiana's 92 counties.
  - Homeland Security also supplied each county Emergency Management Agency with ten laptop computers ready to load and run the First Response Map application.
  - Counties can customize it to their own police, fire, or emergency management needs

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Indiana Department of Homeland Security (IDHS)

Action:

The solution was the Indiana First Response Map (INFRM), a custom viewing application tailored for each of Indiana's 92 counties. The application was built to run on top of existing free map-viewing software, allowing unlimited access with no-cost licensing. Homeland Security also supplied each county Emergency Management Agency with ten laptop computers ready to load and run the First Response Map application.

INFRM was designed to be completely flexible. Counties can customize it to their own police, fire, or emergency management needs. Additional local data can be added using traditional mapping software. For expert mapping professionals, data was packaged as shapefiles, and can be used with any compatible mapping software. The flexibility also extends to more advanced programming. The source code for INFRM is freeware, and a copy of the source code can be obtained and further customized for specific uses.

- Results
  - Indiana's first responders now have state-of-the-art mapping tools in hand to support their emergency management activities
  - The detailed aerial photography provides a common map across each county and throughout the state of Indiana.
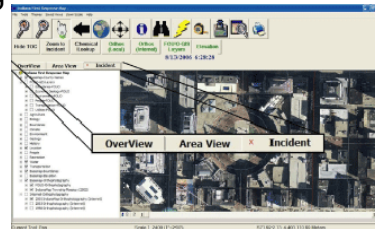
Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
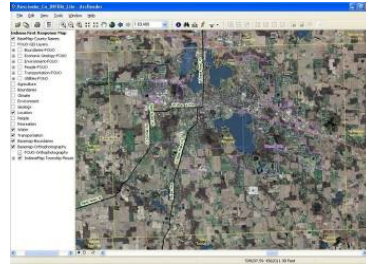
Indiana Department of Homeland Security (IDHS)

Results:

Thanks to this Homeland Security initiative, 920 Indiana first responders now have state-of-the-art mapping tools in hand to support their emergency management activities. The highly-accurate and detailed aerial photography provides a common map across each county and throughout the state of Indiana. The ability to integrate this data with other local data layers provides the best available digital map data to the first responders and emergency management community throughout Indiana.

State Government – INDOT 2
Is it safe to drive?

- Background
  - Severe weather can create hazardous weather conditions
  - INDOT maintains weather sensors and stations along the road network throughout the state
  - The data from those sensors was available to a select group of winter road operation planners to help manage road conditions
- Challenge
  - To provide the same information about road conditions to local officials and the general public

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

INDOT 2

Background/Challenge:

Severe weather can create hazardous driving conditions. During inclement weather, how can drivers get current information about Indiana roads? What are the road surface and sub-surface temperatures throughout the state? How can I tell if road conditions are safe?

The Indiana Department of Transportation (INDOT) maintains weather sensors and stations along the road network throughout the state. The data from those sensors is available to a select group of winter road operation planners to help manage road conditions. INDOT wanted to make this data available to local officials and the general public.

State Government
Is it safe to drive?

- Action
  - INDOT developed the Road Weather Information System (RWIS) and made it available via a web portal
    - The site pulls data from the weather sensor servers every 15 minutes
    - Users can browse maps and select sensors for detailed information, or view summary tables of all sensors
    - Users can label the maps with the most recent information from the sensors
    - There are currently 30 sensors online with new ones being added as they are installed

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

INDOT 2

Action:

INDOT developed the **Road Weather Information System (RWIS)** and made it available via a web portal at **http://rwis.in.gov**. The site pulls data from the weather sensor servers every fifteen minutes. Users can browse the maps and select sensors for detailed information, or view summary tables of all the sensors. The user can also label the maps with the most recent information from the sensors. There are currently 30 sensors online with new ones being added as they become available.

This website is part of a larger effort to get decision-making data out to the general public, local and federal decision makers. A main priority is to take existing web pages and applications that are text-based and add meaningful mapping/GIS components to them.

INDOT 2

Results:

The RWIS portal is an efficient way to disseminate usable data, without requiring expertise in geography or computer sciences. It has been very popular, especially during extreme weather events. During a single large snow storm in December 2004, the site had tens of thousands of unique visitors with over one hundred thousand page hits for the five days snow was on the ground. Drivers were able to make intelligent, well-informed decisions about their travel plans.

County Governments use GIS for many reasons

- To provide better service to taxpayers
- To more equitably assess real estate
- To provide more services for less cost
- To increase efficiency of departments
- To help Public Safety respond quicker in emergency situations

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

List of County GIS Uses
General
•To provide better service to taxpayers
•To more equitably assess real estate
•To provide more services for less cost
•To increase efficiency of departments
•To help Public Safety respond quicker in emergency situations
Specific
•Map well and septic locations and analyze relationships
•Map parcel boundaries
•Road pavement management
•GPS locate and map PLSS section corners
•Map the county managed drainage network
•Map the precinct boundaries from legal descriptions
•Map the locations of houses that have sold to help assess other properties
•Use GIS to overlay soil and land use to assess agricultural land
•Map and inventory sign locations
•Use GIS to route snow plows during winter snowstorms
•Map and analyze nitrate contamination in goundwater
•Map high lead poison potential areas based on age of housing and other factors
•Map and catalog large contiguous areas of natural vegetation for wildlife habitat
•Map and analyze student enrollment trends versus staffing is schools over time
•Map the geology of state parks using digital elevation modelss
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•Determine potential sites for wetland mitigation
•Create GIS based voter registration system
•Create site fliers for economic development sites
•Mapping coastal features
•Oil spill planning and reponse
•Determining potential carcass disposal sites in case of mad cow, bird flu outbreak

**County Government – Wells County
Spend Less Time, Spend Less Money**

- Challenge
  - ✦ Improve services to taxpayers
  - ✦ Not increase costs to users

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
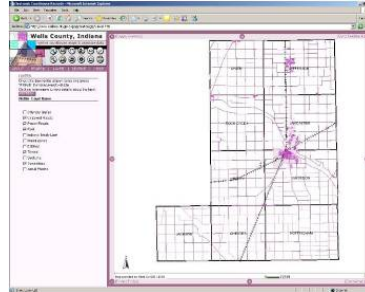
Wells County Example

Challenge:

In today's business world, efficiency and cost effectiveness translate into real cost savings. This applies to county governments as well. When the Wells County Assessor's Office wanted to improve their services without increasing costs, they looked to the internet and GIS for a solution.

Wells County Example

Action:

The Assessor's Office determined that a property search tool would offer the most benefits and broadest impact to customers. The web application they chose is available both over the internet and intranet, and can accommodate the County's data as it is changed or expanded. Because it is a web-based application, virtually anyone with internet access can use it.

The search tool can be accessed from the Wells County GIS website. Visitors select a type of property: residential, agricultural or commercial. Once the type is selected, people can customize their search using categories ranging from square footage to year of construction. Giving people the choice of using broad or narrow search criteria allows them to find what they want quickly and easily.

**County Government – Wells County
Spend Less Time, Spend Less Money**

- Results
  - ✦ Provided access to maps, CAMA data, and tax billing data in one place
  - ✦ Provided an efficient and cost-effective solution for the county
  - ✦ Provided access to county property records 24 hours a day / 7 days a week.
  - ✦ Reduced phone and foot traffic to county offices
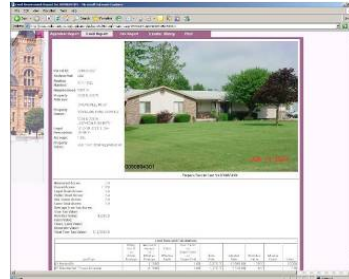
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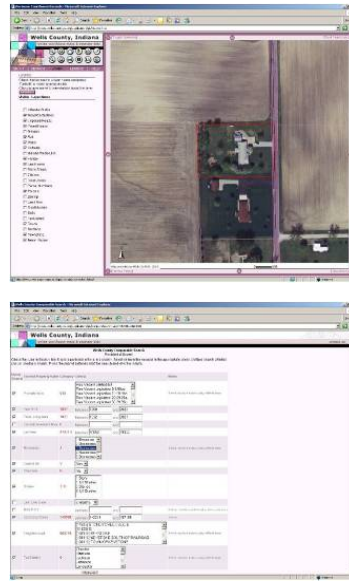
Wells County Example

Results:

Combining the County's GIS website and the property search tool provided an efficient and cost-effective solution for the County. Publishing information online allows the public to do their own research from the comfort of their home. The Assessor's Office is essentially open 24 hours a day, without paying for additional staff time. In fact, what used to require a full-time employee is now handled in an hour a day. **www.wellscountygis.org**

County Government – Monroe County
Mapping the waters

- Background
  + The 1987 amendments to the Clean Water Act 1) identified urban storm water runoff as a source of water pollution and   2) recognized the need to study the sources of runoff and other factors contributing to water pollution
  + The need for a project to meet these challenges was furthered by Indiana State Rule 13, which applies to all entities having a Municipal Separate Storm Sewer System (MS4) and that are, as a result, discharging storm water.
- Challenge
  + To meet the compliance requirements of the Clean Water Act and Indiana State Rule 13
  + To develop a long term analysis plan to aid in planning efforts by identifying impacted receiving waters and prioritizing investigative and corrective resources
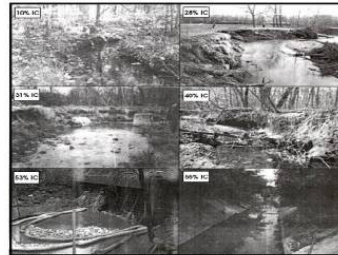
Figure 7: "Urban Stream Channels with Progressively Greater IC."[2]

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Monroe County Example

## Challenge:

The 1987 amendments to the Clean Water Act 1.) identified urban storm water runoff as a source of water pollution, and 2.) recognized the need to study the sources of runoff and other factors contributing to water pollution. Indiana State Rule 13 is a similar measure which applies to entities with sewer system that discharge storm water. The challenge was to meet State and Federal compliance requirements, and develop a long-term water quality analysis plan.

County Government – Monroe County
Mapping the waters

- Action
  - Using Geographic Information Systems (GIS), the Monroe County Planning Department developed a Stream Assessment which gives an overview of water quality
  - The study developed a unique methodology which utilizes zoning classifications to calculate both current and future impervious cover estimates in catchments
  - The completed assessment shows where runoff originates, indicates land use on each property, and determines which water bodies are affected by the runoff

West Fork Clear Creek, Zoning

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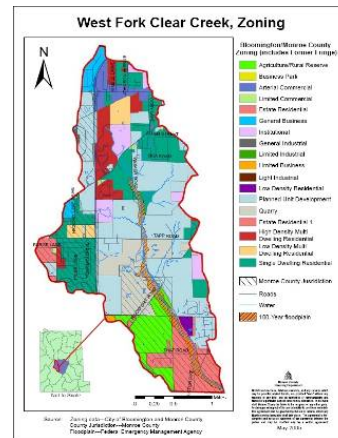
Monroe County Example

Action:

Using Geographic Information Systems (GIS), the Monroe County Planning Department developed a Stream Assessment which gives an overview of water quality.

The first step was to determine the amount of runoff produced by different areas. Planners developed a unique process which uses zoning classifications to calculate both current and future impervious surface estimates. Those areas with more impervious surfaces, like parking lots and driveways, generate more runoff. Next came the lengthy process of reviewing and classifying parcels according to land use. Finally, benchmarks were used in calculations to provide a snapshot of long-term water quality impacts in a given area.

The completed assessment shows where runoff originates, indicates land use on each property, and determines which water bodies are affected by the runoff. This combined data provides a baseline for future comparison, and is a key component in analyzing the effects of land use on water quality over time

County Government – Monroe County
Mapping the waters

- Results
  - Monroe County planners developed a highly-effective water quality analysis tool
  - Planners can see which bodies of water are most heavily affected by pollution from storm water
  - The impact of future development can be seen before it is approved
  - Investigative and corrective resources can be prioritized based on quantifiable needs
  - The evaluation process was designed to be easily replicated for use by all levels of government

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
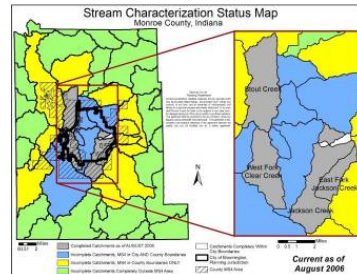
Monroe County Example

Results:

•Monroe County planners developed a highly-effective water quality analysis tool

•Planners can see which bodies of water are most heavily affected by pollution from storm water

•The impact of future development can be seen before it is approved

•Investigative and corrective resources can be prioritized based on quantifiable needs

•The evaluation process was designed to be easily replicated for use by all levels of government

- Challenge
  - ✦ Reduce redundancy of effort
  - ✦ Provide vital data to end users much faster
  - ✦ HAGTAG (Hamilton County Local Government GIS Technical Advisory Group)

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

HAGTAG Example:

Challenge:

Address and street data is used, verified and corrected by many different agencies at all levels of government. This was the case in Hamilton County, where inaccurate and outdated information was being corrected by individual cities and towns. The question was how to efficiently and effectively share that improved data between all the cities and towns, County, and public safety officials?

Partners in project: Hamilton County, City of Carmel, City of Fishers, City of Noblesville, Town of Westfield

County Government - HAGTAG
City/County Cooperation

- Action
  - ✦ Utilize the regions new fiber optic network to provide connectivity
  - ✦ Implement an ESRI multiuser geodatabase with ArcSDE that all users can edit
  - ✦ Allow multiple people to edit the same GIS layers, the road centerline and address point layers

E911 Centerlines

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
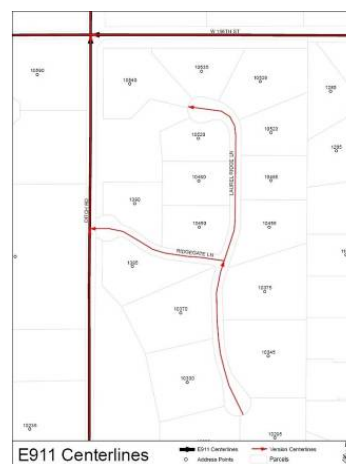
HAGTAG Example:

Action:

The Hamilton County Local Government GIS Technical Advisory Group (HAGTAG) was formed to facilitate coordination between governments in this fast-growing county. Members recognized the importance of having and sharing critical data, and began developing a multi-user geodatabase to address those needs. The database is shared over a countywide fiber optic network, and accessed by users in the Hamilton County Sherriff's Office, Carmel, Fishers, Noblesville and Westfield. Users in each location are responsible for editing the geodatabase and maps seen by all.

The first project to be implemented in this system was the Distributed Maintenance of 911 Address Data. The project involved multiple technicians simultaneously editing the same map layers, namely street centerlines and address points. This moved maintenance of the data much closer to the people who first receive it. New address and street data is incorporated into the system more accurately and sooner than ever before; in some cases, six months sooner.

HAGTAG Example:

Results:

   With the new system, Computer Aided Dispatch operators can send police to the correct address immediately; Mobile Data Computers used by fire departments have up-to-date maps of new subdivisions; and the Communications Center can confidently coordinate response to emergencies that span municipal boundaries.

   The success of the Distributed Maintenance of 911 Address Data Project can be seen daily in the correct, accurate, and up-to-date address point data and street centerline maps used by emergency personnel throughout Hamilton County. It exemplifies how cooperation and pooling resources can benefit everyone involved, including the citizens of Hamilton County.

County Government – Kosciusko County
Helping Public Safety to respond quicker

- Challenge
  - Provide a way for the dispatchers to dispatch Police, Fire and EMS more efficiently
  - Provide a mapping interface that will help locate the hard to find areas, such as lake residential areas and mobile home parks

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
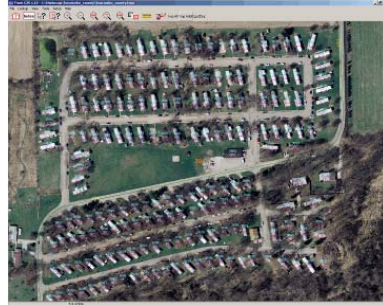
Kosciusko County Example:

Challenge:

In 1999, the GIS Director of Kosciusko County visited the County's Dispatch Center. He found that they were using an old county road map and the dispatchers knowledge of the county to dispatch Police, Fire and EMS to a County that covers 554 square miles. The county has a population of 75,000 – 80,000 year around and it increases to more than 100,000 on summer weekends because of the numerous recreational lakes in the county. There had to be a more efficient and consistent way to dispatch emergency vehicles in the county.

County Government – Kosciusko County
Helping Public Safety to respond quicker

- Action
  - Implement a pinpoint address viewer
  - Provide query tools to search by address, road, intersection, and school
  - Provide ability to locate cell phone calls on the address viewer
  - Provide link to picture of house from CAMA database
  - Enable dispatchers to view aerial photos, property lines, roads and addresses as needed

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
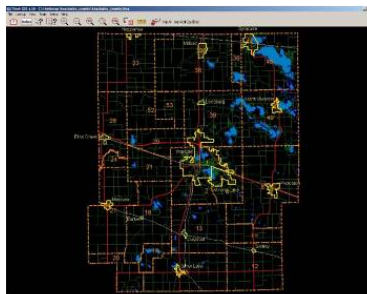
Kosciusko County Example:

Action:

The county implemented a Pinpoint Address Viewer in the County's Central Dispatch Center. This viewer was created by a GIS consulting firm. Instead of depending on an old county road map (which did not show most of the roads in the towns, subdivisions, and by the lakes) and the knowledge of the dispatchers, the county would depend on the GIS data created by the GIS Department. Specifically the system would depend on the address points and road centerlines to locate emergencies and dispatch vehicles to those emergency situations.

The map viewer would also display aerial photography, city and town boundaries, school locations, lake locations and many other layers. On certain layers images are linked. On the school locations layer the dispatcher can look at floorplans and entrance pictures for each school.

**County Government – Kosciusko County
Helping Public Safety to respond quicker**

- Results
  - Quicker and more efficient response in an emergency
  - Much less problem in finding areas around the lakes and mobile home parks
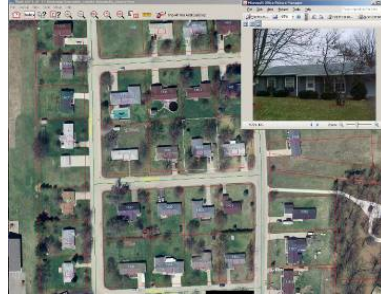
Kosciusko County Example:

Results:

The pinpoint address viewer has been implemented in the Central Dispatch Center and now resides on the Mobile Data Units (or laptops) in the Sheriff's Department Patrol Cars, other City and Town Patrol Cars, Fire Trucks, and EMS vehicles. "It has greatly improved the time it takes a responder to get to the site of an emergency" says Tom Brindle the Kosciusko County 911 Director.

Municipal Governments use GIS for many reasons

- To market municipality to prospective industries
- To analyze patterns of crime
- To map utilities
- To identify and map existing and proposed land uses
- To help departments with code enforcement operations

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

List of Municipal GIS Uses

General

•To market municipality to prospective industries

•To analyze patterns of crime

•To map utilities

•To identify and map existing and proposed land uses

•To help departments with code enforcement operations

Specific

•Map sanitary and storm sewer systems

•Emergency response

•Identify neighborhoods with high crime concentrations, which helps commanders to better distribute resources

•Accurately assess residents stormwater use based on impervious surface calculations

•Map parolees and sex offenders

•Map the precinct boundaries from legal descriptions

•Map and inventory sign locations

•Use GIS to route snow plows during winter snowstorms

•Map high lead poison potential areas based on age of housing and other factors

•Determine if drug and weapons violations occur within 1000 feet of prohibited area (school)

•Map water lines

•Map pollution sources along recreational area (river, lake or ocean)

- Challenge
    - ✦ To find a method to analyze relationships between individual crimes
    - ✦ To identify any emerging crime patterns

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

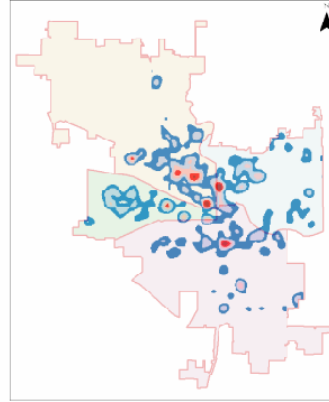**City of South Bend Example:**

Challenge:

The South Bend Police Department has always kept records on all crimes officers respond to, but analyzing any relationships between individual crimes or identifying any emerging patterns has been difficult.

Municipal Government – South Bend PD
Using GIS to Track Crime

- Action
    - Created the Regional Crime Intelligence Unit (RCIU) to map out where crimes were occurring
    - City made software, training and manuals available
    - Crimes are entered and weighted based on the severity of the incident, and maps are produced monthly

City of South Bend Example:

Action:

Working with the City, the police department created the Regional Crime Intelligence Unit (RCIU) to map out where crimes are occurring. The City made software, training and a manual available. The Bureau of GIS maintains information on streets and addresses, including an Address Locator Manager that eliminates the need to manually adjust addresses due to spelling or abbreviation issues. Crimes are entered and weighted based on the severity of the incident, and maps are produced monthly.

Municipal Government – South Bend PD
Using GIS to Track Crime

- Results

  The new tools are used by the police department to:

  + Identify high crime areas, which helps Police Department to effectively distribute resources
  + Show the impact of police resources in the community
  + Map parolees and sexual offenders
  + Quickly discern if drug and weapons violations occur within 1000 feet of prohibited areas

  Possession of Marijuana and Cocaine Arrests

  Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

City of South Bend Example:

Results:

The new tools are used by the police department to:

-Identify neighborhoods with comparatively high concentrations of crime. With this information, commanding officers can more effectively distribute police resources to those areas.

-Show the impact of police resources in a community. While people's perceptions of police action can be subjective, the new tools provide objective and quantifiable measurements of

   crime levels.

-Develop investigative leads to solve burglaries, robberies, motor vehicle thefts and a variety of other crimes. Without the new tools, police would not have a "map of an attack."

-Map parolees and sexual offenders. This information can be invaluable when there is a sudden rash of crime

- Challenge
  - ✦ To help City departments better manage the mountains of information
  - ✦ To provide city-wide access to utility, zoning and street information
  - ✦ To create an high quality, cost sensitive system
  - ✦ To develop a system that will be embraced by city staff

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

City of Greensburg Example:

Challenge:

City leaders are increasingly faced with mountains of information they need to make sense of. The City of Greensburg was in that situation - officials needed convenient city-wide access to utility, zoning and street information. In 2002, the City completed their first GIS Needs Assessment and Implementation Plan. Greensburg's newly established GIS Committee identified the need for:

•A high-quality, cost-sensitive system

•Development and maintenance of reliable data

•Timely data collection

•City staff to feel a sense of ownership of toward the GIS

•Centralized control of data

- Action
  - ✦ Develop the Greensburg LANd and Asset ConnEction (GLANCE), which is a custom application accessing the City's central GIS database
  - ✦ The GLANCE system was designed to help city staff to:
    - ▪ Plan community growth
    - ▪ Promote economic development
    - ▪ Manage assets
    - ▪ Produce utility map books
    - ▪ Locate addresses
    - ▪ Prepare emergency responses

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

City of Greensburg Example:

Action:

The Greensburg LANd and Asset ConnEction (GLANCE) was developed as a custom GIS application accessing the City's central GIS database. Specific elements were designed to assist City staff with critical activities like planning community growth, promoting economic development, managing assets, producing utility map books, locating addresses, and preparing emergency responses.

- Results
  - The City is able to coordinate and analyze large amounts of information in a way that yields meaningful results while saving time and money
  - Manage utility, street paving and zoning programs
  - Share information with County officials and 911
  - Accurately and efficiently respond to requests about new stormwater permit requirements

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
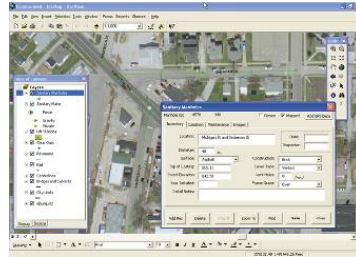
City of Greensburg Example:

Results:

Greensburg is able to coordinate and analyze large amounts of information in a way that yields meaningful results while saving time and money.

•Manage utility, street paving and zoning programs

•Accurately and efficiently respond to requests about new stormwater permit requirements

•Share information with County officials and 911 emergency services

•Maintain and disseminate property ownership and parcel records

Municipal Government - Evansville Neighborhood Revitalization

- Challenge
  - ✦ To reverse the loss of housing stock in the urban core
  - ✦ To select an area to focus revitalization

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships
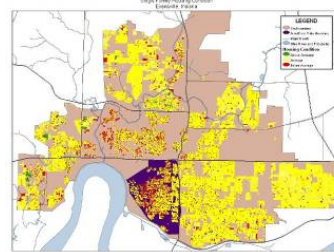
City of Evansville Example:

Challenge:

Reverse the loss of housing stock and population in the urban core. It was necessary to define a specific area to establish an extensive neighborhood and community revitalization effort dubbed Front Door Pride. This comprehensive program includes new housing construction, along with owner and renter occupied housing rehabilitation in Evansville's older neighborhoods. Due to financial, logistics and other restraints, it was necessary to limit which sector of the urban core was in utmost need of revitalization and at greatest risk of rapid decline. By using multiple GIS layers and available data the boundary for Front Door Pride quickly became apparent.

City of Evansville Example:
Action:

Primarily, GIS was used to define the boundary area for Front Door Pride. A variety of data bases from these sources were layered into the project map:

•Vanderburgh County Assessor – age of housing stock, assessed value, housing condition, etc.

•2000 Census – owner vs. rental housing units, vacant housing units, residents age and income levels

•City of Evansville, Neighborhood Inspection Services – three years of raze orders and 1999-2004 weed, housing code, trash and debris violations

•Vanderburgh County Treasurer – tax delinquent parcels and property tax exemptions

•Area Plan Commission - zoning vs. land use

Once the data was mapped, it quickly became apparent which area of the City had the greatest need. With the subsequent statistical information derived from using GIS, the need, area and emphasis was clearly definable to all. The City of Evansville, was ready to improve housing conditions, add infill single family housing units, cleanup distressed properties and make overall improvements to the neighborhoods.

In addition, GIS layers reflecting historical significance factors, tax delinquencies, types of property tax exemptions and assessed value were used to define an Art District area within Front Door Pride. A varied revitalization approach will be used in this much smaller district.

Municipal Government – Evansville Neighborhood Revitalization

- Results

  ✦ As a result of GIS research to define the project area, the City was awarded a $1 million housing from the State of Indiana

  ✦ The City budgeted over $1 million of property tax funds and federal funds for the program
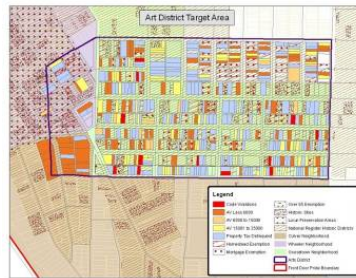
Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

City of Evansville Example:
Results:

As a result of GIS research to define the Front Door Pride area and collect substantial data, the City was able to leverage a $1 million housing grant from the State of Indiana.   The City has also budgeted over $1,000,000 of property tax funds and federal funds (Community Development Block Grant and HOME dollars) for the program. Additional funds will be available from the private sector in the form of attractive financing packages for residents.

GIS mapping facilitated identification of tax sale properties in Front Door Pride, where over 180 properties were purchased for future infill housing and rehabable homes over the past 18 months.

Other Notes:

The GIS capability as a platform made the tracking and displaying of information easier to explain to policymakers. Without mapping, it would be very difficult for policymakers to understand the basis of recommendations from staff.

Municipal Government - Indianapolis
Improving Utility Billing

- Background
  - ✦ Drainage in Indianapolis historically a problem
  - ✦ Impervious services like concrete and asphalt don't allow water to soak into the ground
  - ✦ A Stormwater Utility was created to fund construction and maintenance of the City's new stormwater collection system
- Challenge
  - ✦ The new utility needed to begin collecting users fees as soon as possible, so they looked to GIS for a solution

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

City of Indianapolis Example:

Background/Challenge:

Impervious surfaces - hard surfaces like concrete and asphalt - don't allow rain water to soak into the ground. That can produce excessive stormwater runoff that fills and overflows city sewers.

Drainage in Indianapolis has always been a problem. Recently, the Stormwater Utility was established to fund construction and maintenance of the City's new stormwater collection system. It was imperative that the Utility begin collecting user fees as quickly as possible, so they turned to GIS for a solution.

Municipal Government – Indianapolis
Improving Utility Billing

- Action
  - GIS was used to calculate the area of impervious surfaces for over 40,000 non-residential parcels
  - Used GIS Data, aerial photos parcels and buildings to inspect and catalog all impervious services in Indianapolis-Marion County
  - GIS technology was used to automatically calculate the amount of impervious surface for each parcel
  - Completed data was provided to a billing company who performed fee calculations and sent out the bills

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

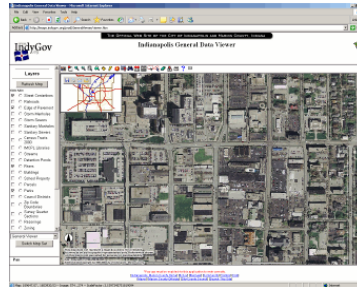**City of Indianapolis Example:**

Action:

GIS was used to calculate the area of impervious surfaces for over 40,000 non-residential parcels. The project used GIS data - aerial photography, land ownership, and buildings - to visually inspect and catalog all impervious surfaces in Marion County-Indianapolis. After compilation, GIS technology was used to automatically calculate the amount of impervious surface, by type, for each parcel. The impervious surface maps were posted online, and quality control was performed off-site. The completed data was provided to a billing company who performed fee calculations and sent out the bills.

GIS continues to play a vital role as this project moves into the maintenance phase. Using GIS, construction permits are located by address and impervious surfaces of new construction are captured from aerial photos. Occasionally, field work is required, and GIS technology is used on Personal Digital Assistants (PDA).

Municipal Government – Indianapolis
Improving Utility Billing

- Results
  - GIS allowed the City to quickly set up a fair and equitable revenue source that will generate $7- $8 million per year for improving stormwater drainage
  - The project was on a highly accelerated five-month schedule. By using GIS, it was completed on time and within budget

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

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List of Other Governmental GIS Uses

General

•To help with long range transportation planning

•To analyze regional transportation patterns

•To determine where new roads need to be constructed

•To analyze and map regional transit use

•To plan for bike and pedestrian trails

•To assist in studying regional freight patterns

•To assess and map the safety of road intersections and railroad crossings

Other Governmental Organizations-NIRPC
Getting there faster

- Background
  - NIRPC is the MPO serving the counties of Lake, Porter and Laporte with a combined population of 741,468
  - NIRPC is responsible for developing and regularly updating the federally prescribed 20-year, long-range transportation plan
  - These plans enable the region to receive transportation funding
- Challenge
  - To implement the use of GIS technology to more effectively and efficiently create the Connections 2030 Regional Transportation Plan
  - Developing the plan required pulling together huge amounts of data, some of which was not readily available

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Northwestern Indiana Regional Planning Commission (NIRPC) Example:

Challenge:

The Northwestern Indiana Regional Planning Commission (NIRPC) is the Metropolitan Planning Organization (MPO) serving the counties of Lake, Porter and LaPorte with a combined population of 741,468. As the MPO, NIRPC is responsible for developing and regularly updating the federally prescribed 20-year, long-range regional transportation plan. These plans enable the region to receive federal transportation funding. NIRPC's *Connections 2030 Regional Transportation Plan* is the latest in a series developed over 30 years.

Developing the plan required pulling together huge amounts of data, some of which was not readily available. Planners needed detailed information to be shown at the "traffic analysis zone" level, but delays in the release of Census data meant some of that information had to be generated from scratch.

Other Governmental Organizations-NIRPC
Getting there faster

- Action
  - Using GIS and existing data, NIRPC was able to recreate the missing census information, developing their own "base year" as a starting point for growth projections
  - GIS was used to show changes in population, employment, and households at the traffic analysis zone level
  - GIS was used to identify special zones; concentrated elderly populations, vehicle availability, persons with disabilities, and areas of significant development, and incorporate them into the plan

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

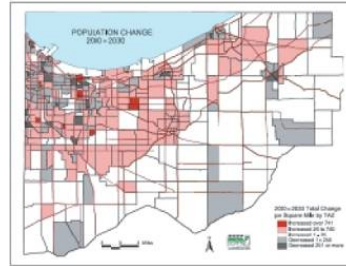**Northwestern Indiana Regional Planning Commission (NIRPC) Example:**

Action:

Using GIS and existing data, NIRPC was able to recreate the missing information, developing their own "base year" as a starting point for growth projections. GIS was then used to show changes in population, employment, and households at the traffic analysis zone level.

GIS was also used to identify special zones - concentrated elderly populations, vehicle availability, persons with disabilities, and areas of significant development - and incorporate them into the plan.

Other Governmental Organizations-NIRPC
Getting there faster

- Results
  - ✦ The use of GIS resulted in the development of a timely, accurate plan
  - ✦ GIS data developed for the Connections 2030 Plan was shared with local jurisdictions and the GIS community in Northwest Indiana
  - ✦ Planners were able to identify and address areas with particular needs
  - ✦ GIS maps were used to easily communicate complex information during the adoption process and were incorporated throughout the completed Connections 2030 Plan

Coordination of Indiana GIS through dissemination of data and data products, education and outreach, adoption of standards, and building partnerships

Northwestern Indiana Regional Planning Commission (NIRPC) Example:

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